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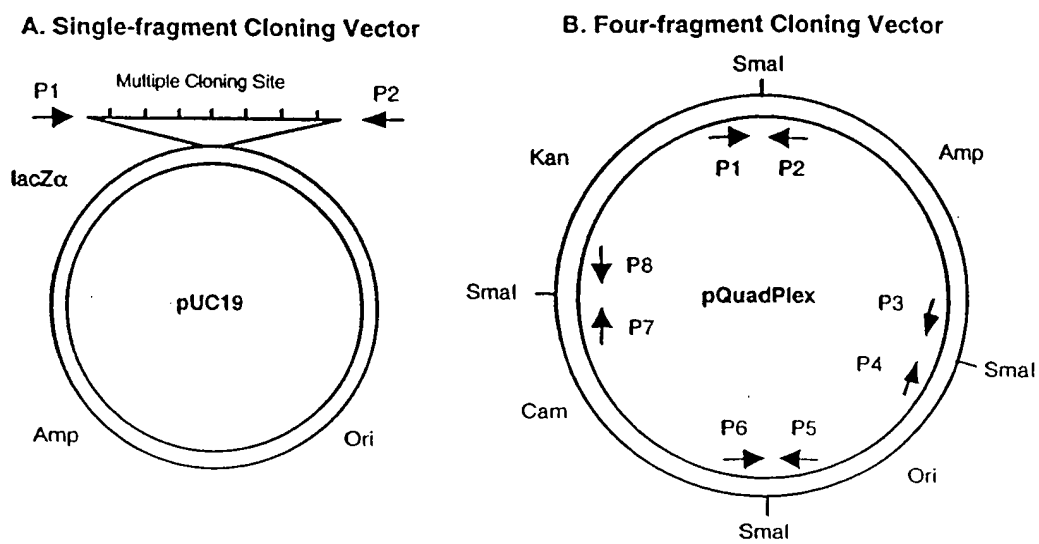
FIGURE 1

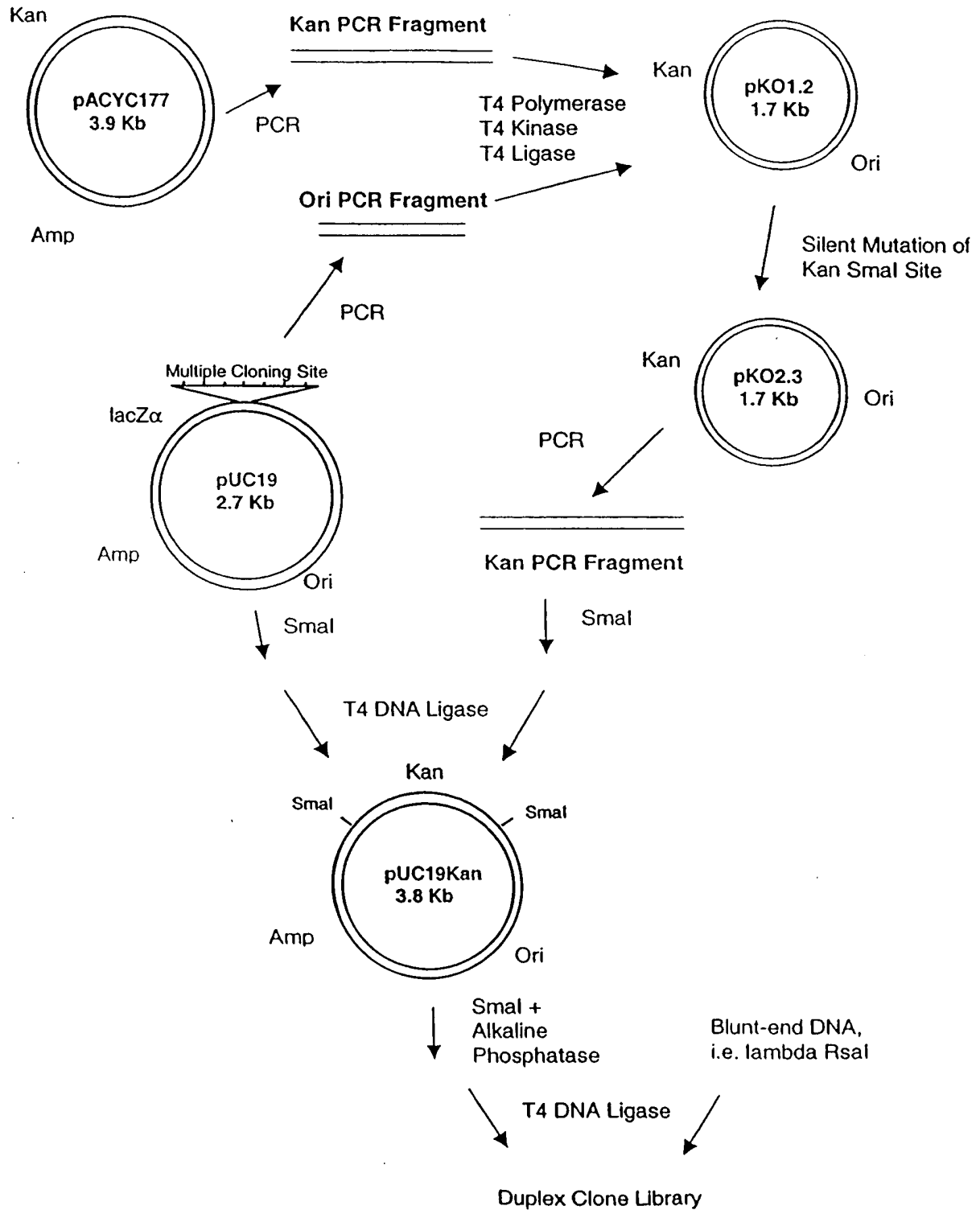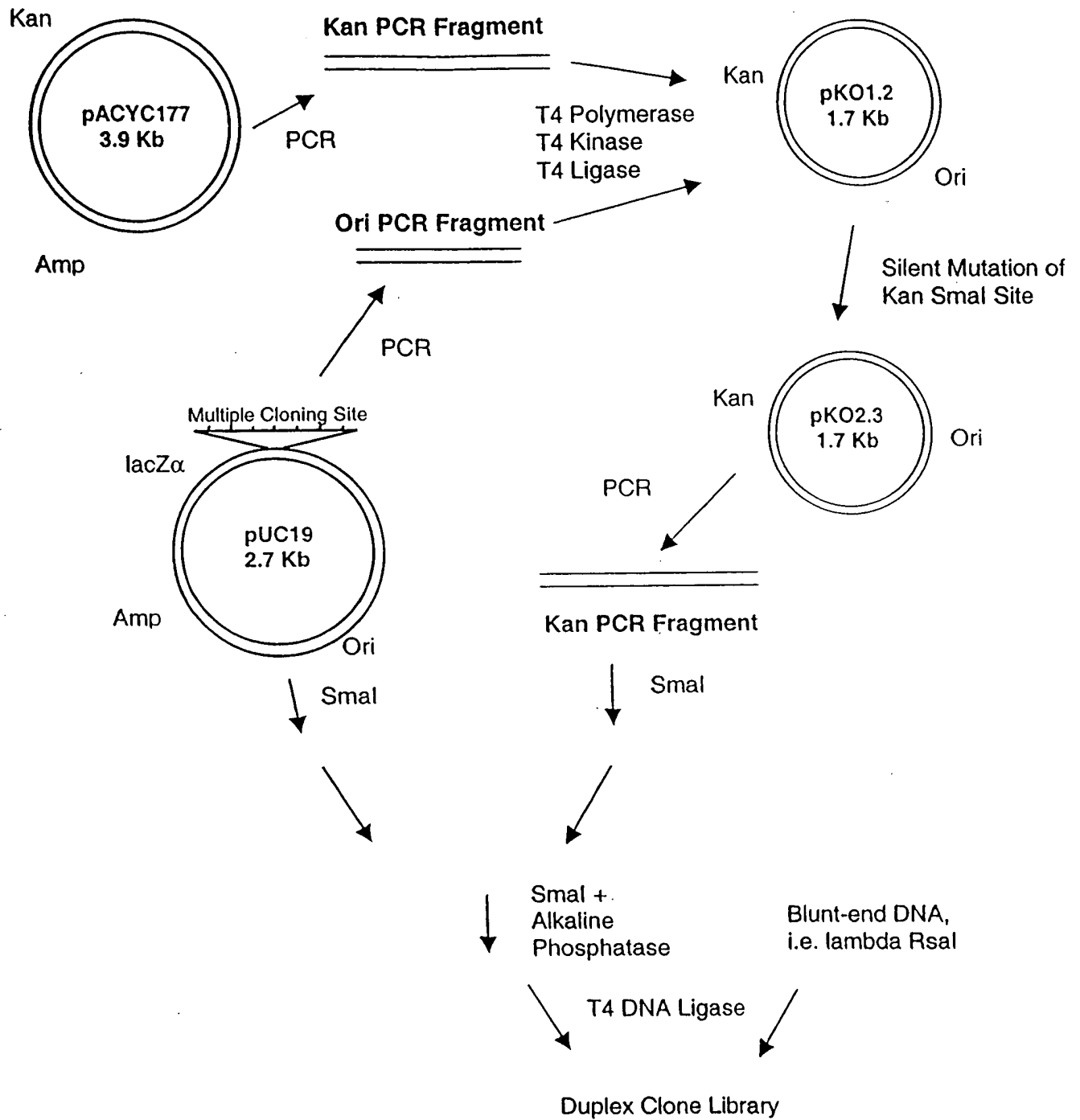**A. Single-fragment Cloning Vector**

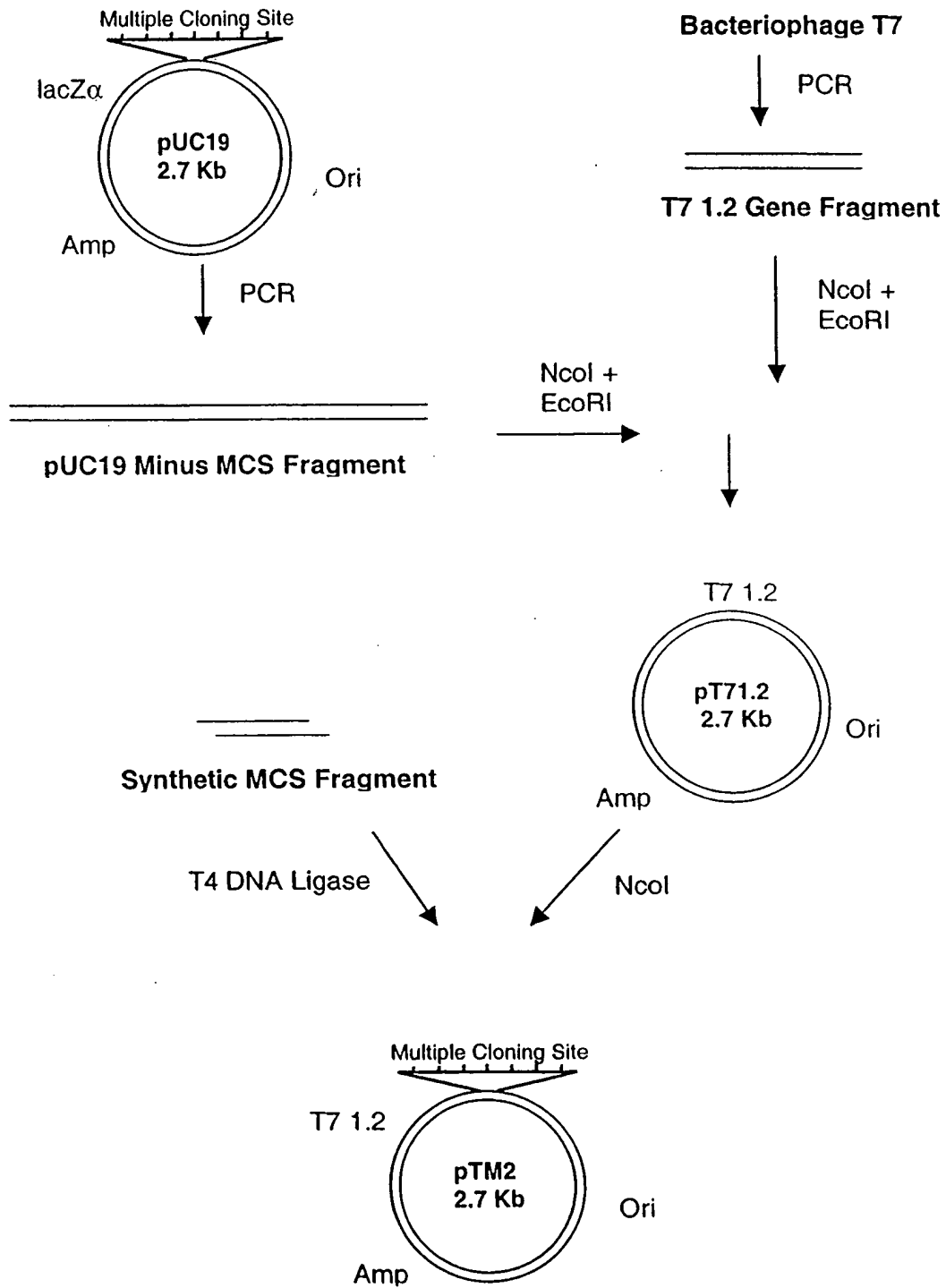**B. Four-fragment Cloning Vector**

FIGURE 2

FIGURE 3

FIGURE 4
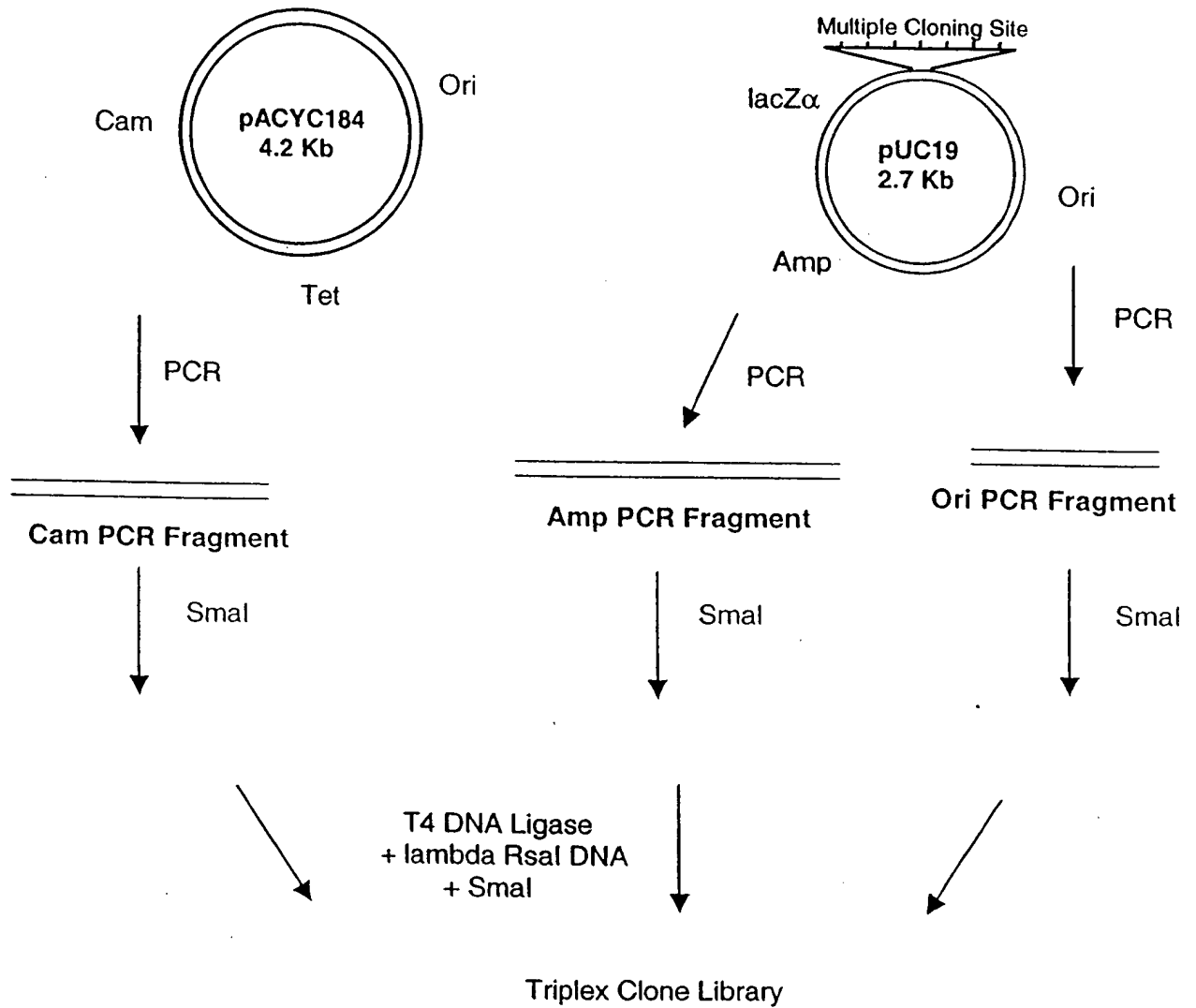
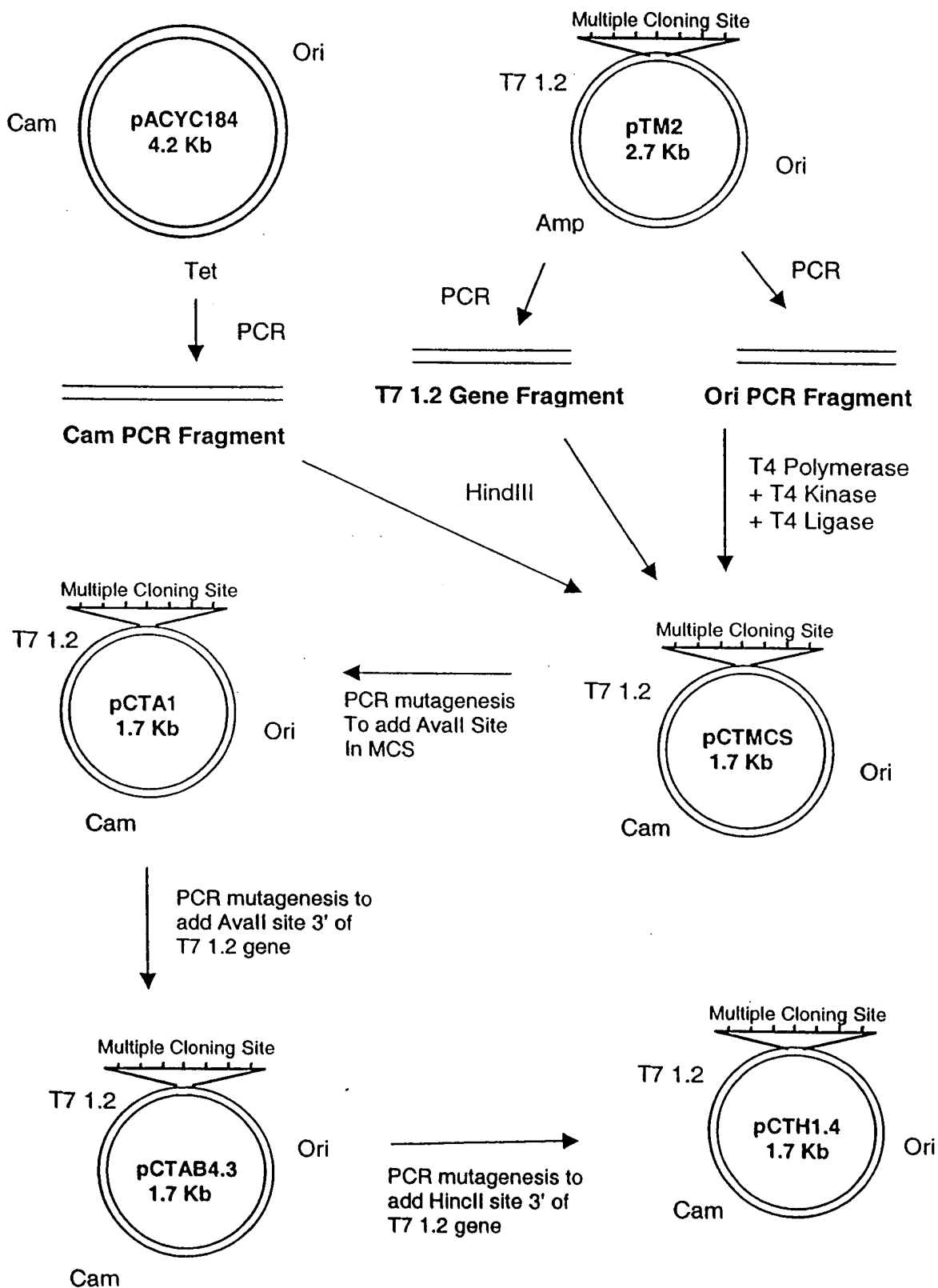# FIGURE 5
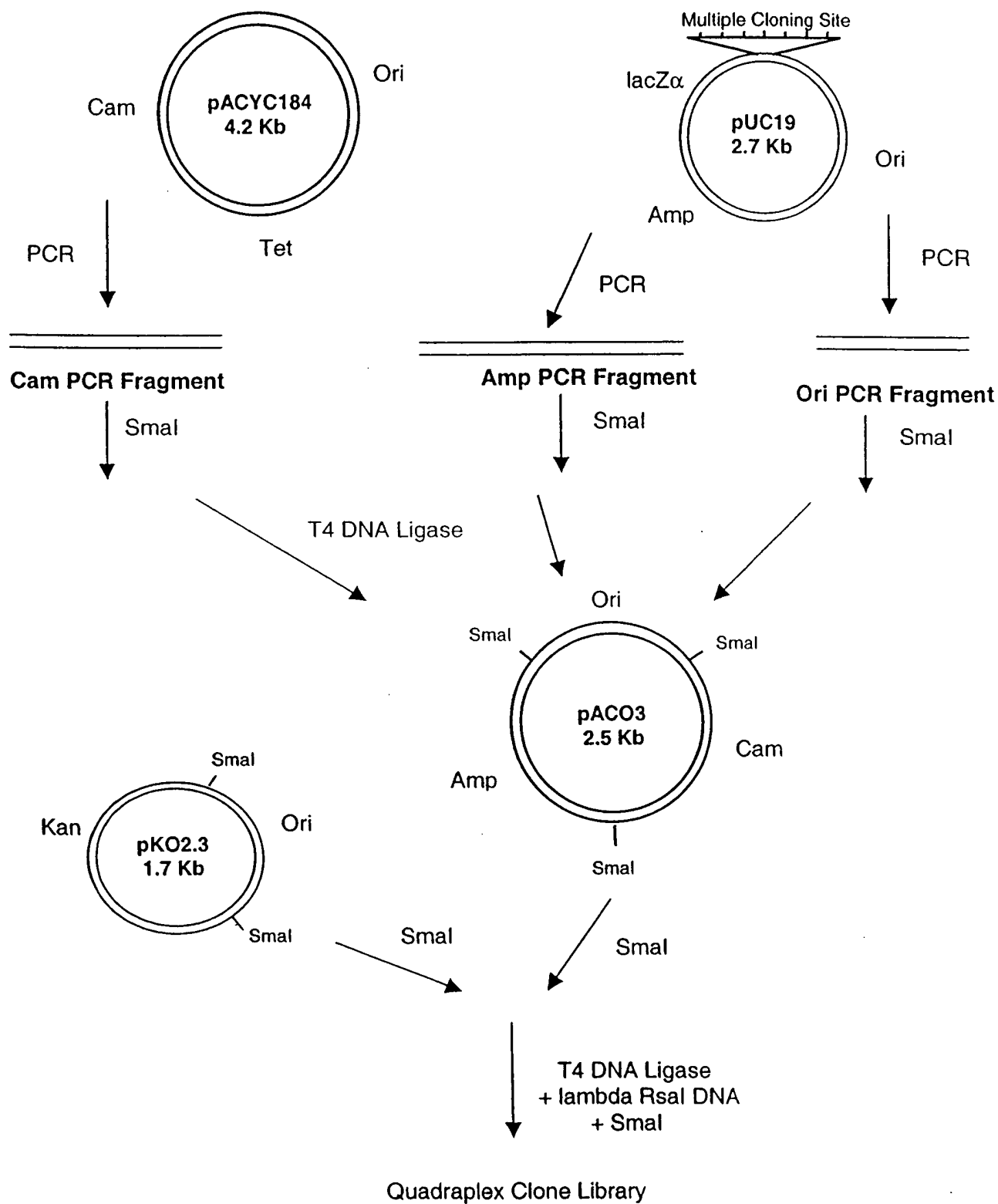
FIGURE 6
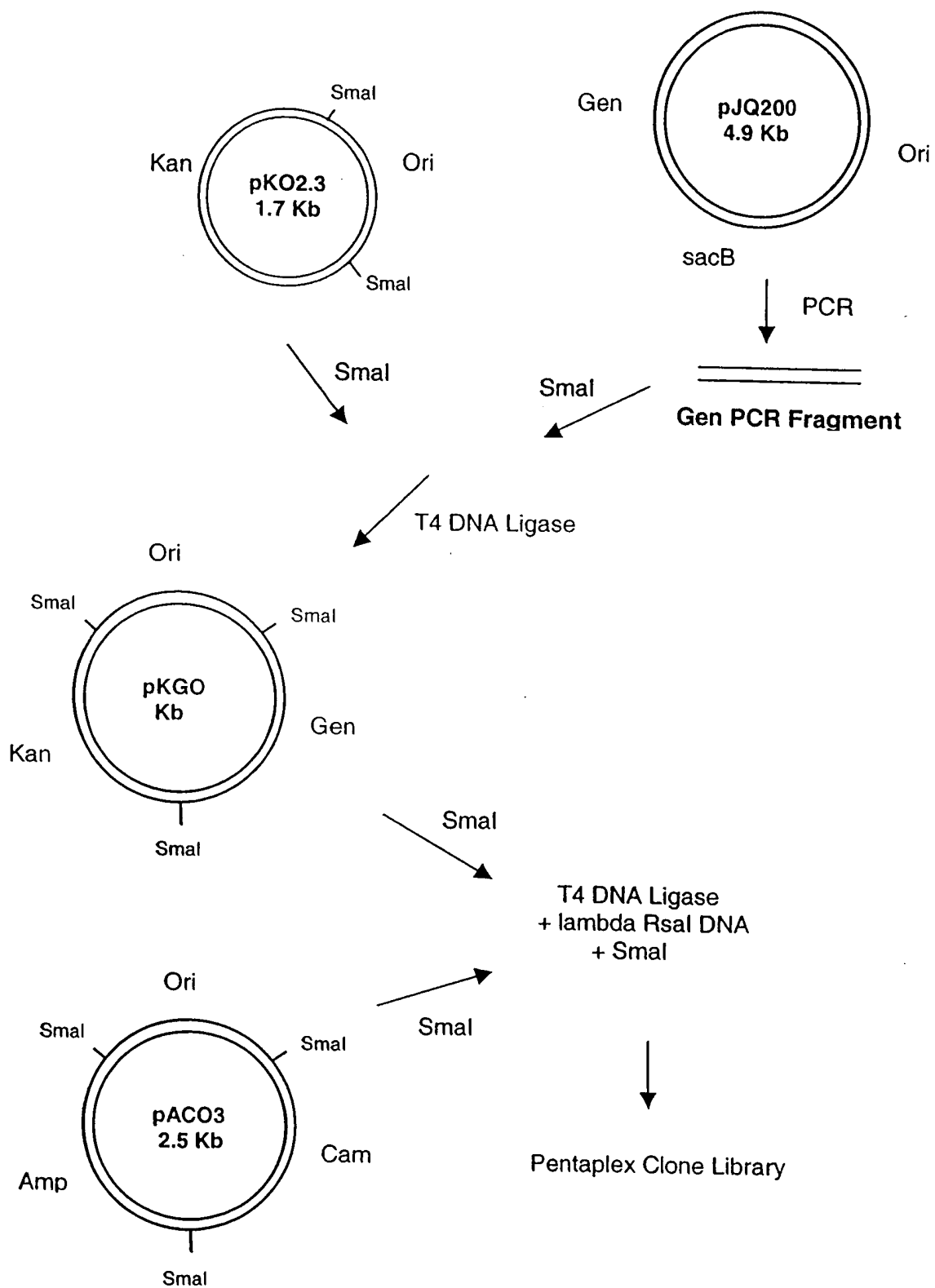
FIGURE 7
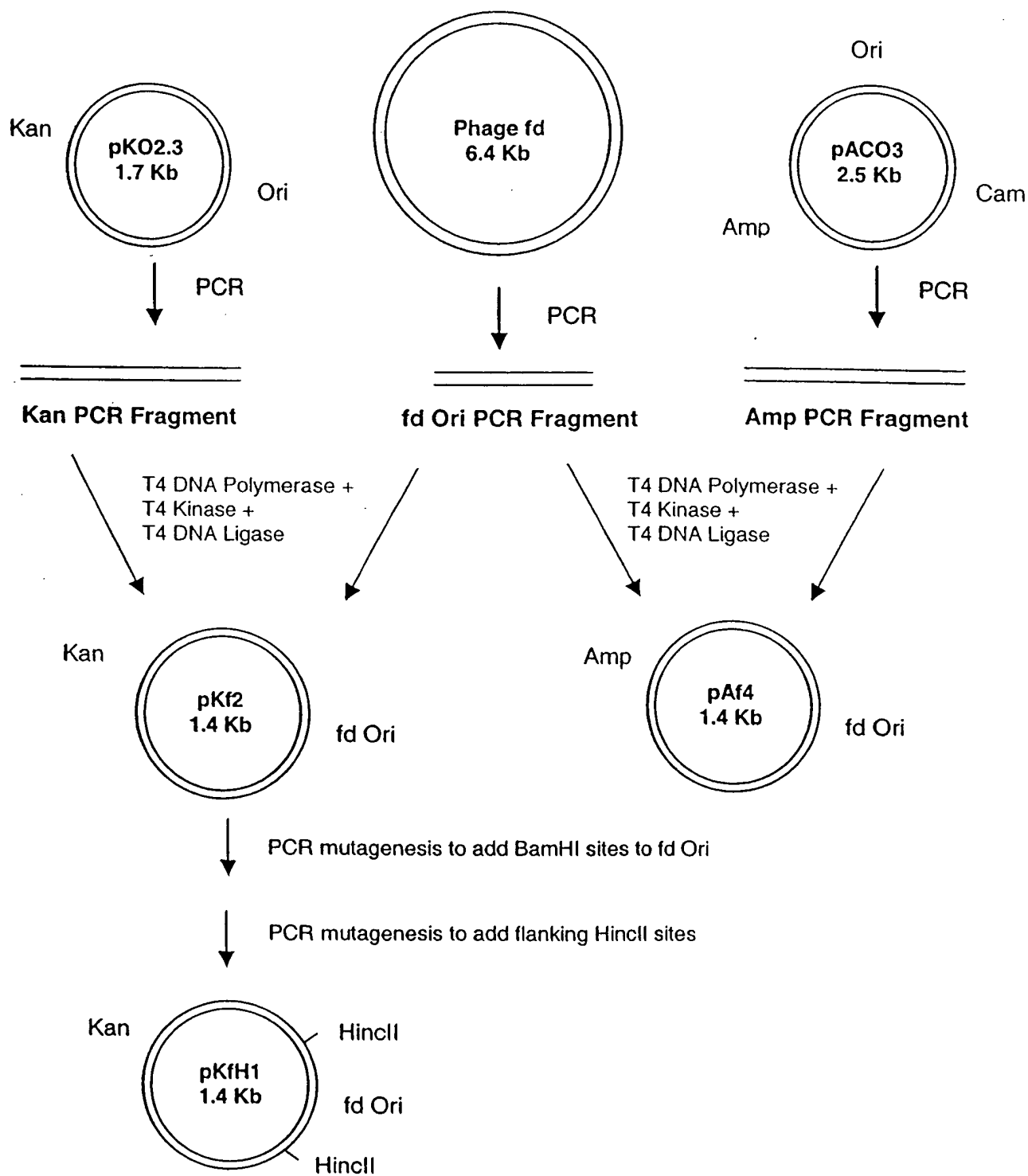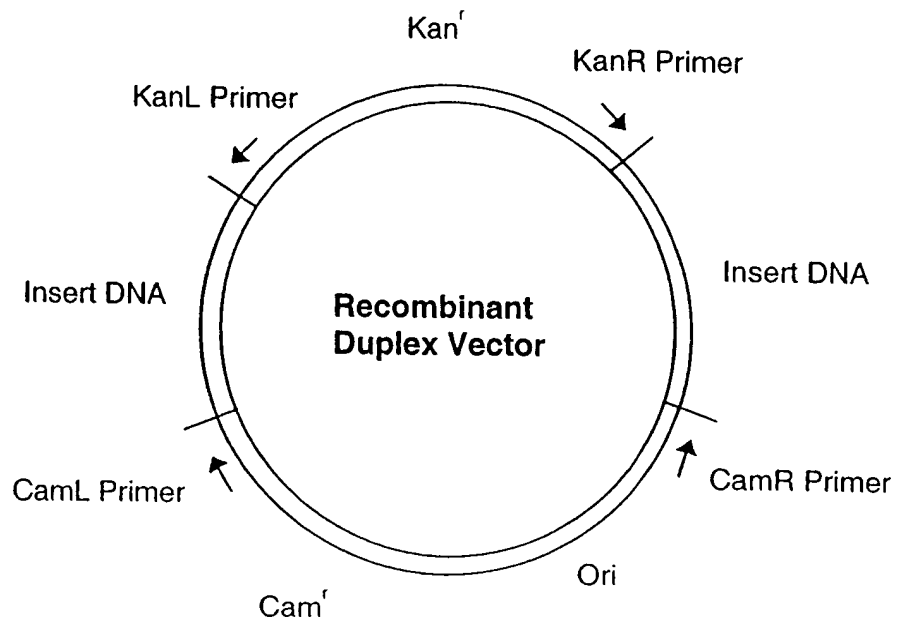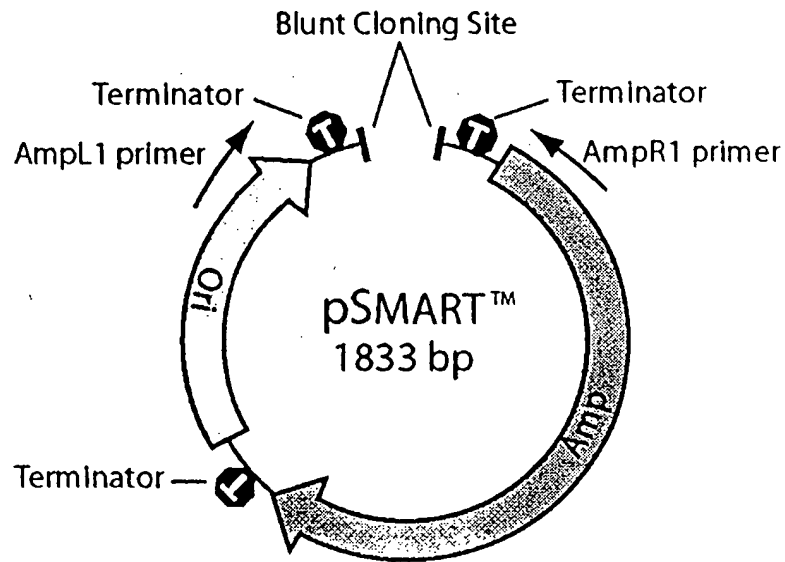
FIGURE 8

FIGURE 9

FIGURE 10

FIGURE 11 (SEQ ID NO:41)

TGATCGGCACGTAAGAGGTTCCAACTTTCACCATAATGAAATAAGATCACTACCGGGCGTATTTTTTGAGTTATCGAGAT
TTTCAGGAGCTAAGGAAGCTAAAATGGAGAAAAAAATCACTGGATATGCCACCGTTGATATATCCCAATGGCATCGTAAA
GAACATTTTGAGGCATTTCAGTCAGTTGCTCAATGTACCTATAACCAGACCGTTCAGCTGGATACTACGGCCTTTTTAAA
GACCGTAAAGAAAAATAAGCACAAGTTTTATCCGGCCTTTATTCACATTCTTGCCCGCCTGATGAATGCTCATCCGGAAT
TCCGTATGGCAGTGAAAGACGGTGAGCTGGTGATATGGGATAGTGTTCACCCTTGTTACACCGTTTTCCATGAGCAAACT
GAAACGTTTTCATCGCTCTGGAGTGAATACCACGACGATTTCCGGCAGTTTCTACACATATATTCGCAAGATGTGGCGTG
TTACGGTGAAAACCTGGCCTATTTCCCTAAAGGGTTTATTGAGAATATGTTTTTCGTCTCAGCCAATCCCTGGGTGAGTT
TCACCAGTTTTGATTTAAACGTGGCCAATATGGACAACTTCTTCGCCCCCGTTTTCACCATGGGCAAATATTATACGCAA
GGCGACAAGGTGCTGATGCCGCTGGCGATTCAGGTTCATCATGCCGTTTGTGATGGCTTCCATGTCGGCAGAATGCTTAA
TGAATTACAACAGTACTGCGATGAGTGGCAGGGCGGGGCGTAAATGCAAAGCTTGCATGCCTGCAGGTCGACTCTAGAGG
ACCGGGTACCGAGCTCAGATCTTAGCATGGGACGTTTATATAGTGGTAATCTGGCAGCATTCAAGGCAGCAACAAACAAG
CTGTTCCAGTTAGACTTAGCGGTCATTTATGATGACTGGTATAATGCCTATACAAGAAAAGATTGCATACGGTTACGTAT
TGAGGACAGATCTGGAAACCTGATTGATACTAGCACCTTCTACCACCACGACGAGGACGTTCTGTTCAATATGTGTACTG
ATTGGTTGAACCATATGTATGACCAGTTGAAGGACTGGAAGTAATAAGATCTTTGGTCCTGCAGGGAGCGTTAACATTTA
AATCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGA
AACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCT
TACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGG
TGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTAT
CGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTA
TGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTC
TGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTT
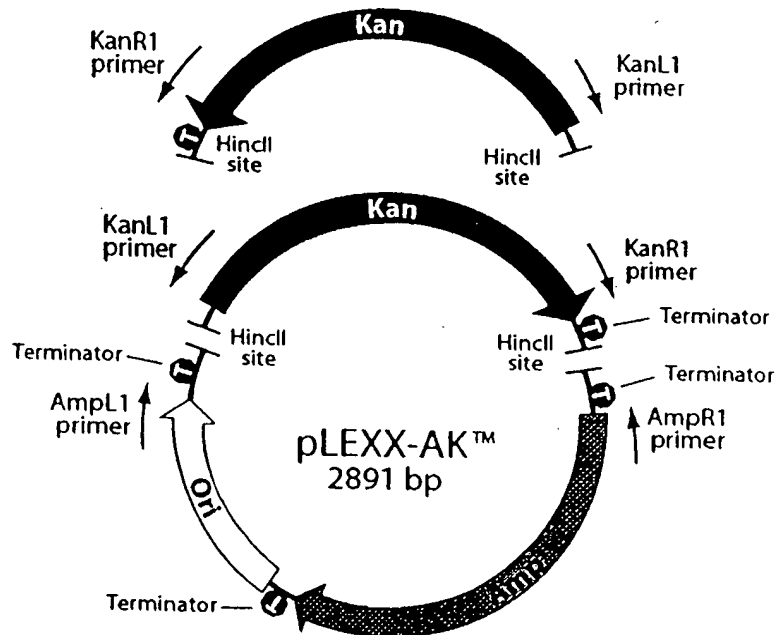TTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAGGATCGTTTGATCTTTTGGGCCC

FIGURE 12

A.

B.

FIGURE 13

A. Kanamycin Gene Primers

(SEQ ID NO:114)

KanL1 Primer

DraI

Insert DNA

ATCTTGTGCAACGTGACATCAGAGATTTTGAGACACAACGTTTAAACGGACGACGACCGTATCGGCTGCAGGATCCAGATATGCGTC...
TAGAACACGTTGCACTGTAGTCTCTAAAACTCTGTGTTGCAAATTTGCCTGCTGGCATAGCCGACGTCCTAGGTCTATACGCAG...

(SEQ ID NO:115)

KanR1 Primer

BstXI

Insert DNA

TTCGTTTTAATCTGGAAAAACCACCCTGGCGCTGCAGGTTCCAGATTCCTGGTT...
AAGCAAAATTAGACCTTTTTGGTGGGACCGCGACGTCCAAGGTCTAAGGACCAA...

B. Ampicillin Gene Primers

(SEQ ID NO:116)

AmpL1 Primer

EcoRV HIndIII EcoRI

Insert DNA

CAGTCCAGTTACGCTGGAGTCTGAGGCTCGTCCTGAATGATATCAAGCTTGAATTCGTT...
GTCAGGTCAATGCGACCTCAGACTCCGAGCAGGACTTACTATAGTTCGAACTTAAGCAA...

(SEQ ID NO:117)

AmpR1 Primer

SwaI

EcoRV XbaI EcoRI

Insert DNA

CTTTCTGCTATGGAGGTCAGGTATGATTTAAATGGTCAGTATTGAGCGATATCTAGAGAATTCGTC...
GAAAGACGATACCTCCAGTCCATACTAAATTTACCAGTCATAACTCGCTATAGATCTCTTAAGCAG...

FIGURE 14

A. SEQ ID NO:85

```
GACGAATTCTCTAGATATCGCTCAATACTGACCATTTAAATCATACCTGA
CCTCCATAGCAGAAAGTCAAAAGCCTCCGACCGGAGGCTTTTGACTTGAT
CGGCACGTAAGAGGTTCCAACTTTCACCATAATGAAATAAGATCACTACC
GGGCGTATTTTTTGAGTTATCGAGATTTTCAGGAGCTAAGGAAGCTAAAA
TGAGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGGCATTT
TGCCTTCCTGTTTTTGCTCACCCAGAAACGCTGGTGAAAGTAAAAGATGC
TGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACA
GCGGTAAGATCCTTGAGAGTTTACGCCCCGAAGAACGTTTTCCAATGATG
AGCACTTTTAAAGTTCTGCTATGTGGCGCGGTATTATCCCGTATTGACGC
CGGGCAAGAGCAACTCGGTCGCCGCATACACTATTCTCAGAATGACTTGG
TTGAGTACTCACCAGTCACAGAAAAGCATCTCACGGATGGCATGACAGTA
AGAGAATTATGCAGTGCTGCCATAACCATGAGTGATAACACTGCGGCCAA
CTTACTTCTGGCAACGATCGGAGGACCGAAGGAGCTAACCGCTTTTTTGC
ACAACATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCTG
AATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAAT
GGCAACAACGTTGCGCAAACTATTAACTGGCGAACTACTTACTCTAGCTT
CCCGGCAACAATTAATAGACTGGATGGAGGCGGATAAAGTTGCAGGATCA
CTTCTGCGCTCGGCCCTCCCGGCTGGCTGGTTTATTGCTGATAAATCTGG
AGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACTGGGGCCAGATG
GTAAGCCCTCCCGCATCGTAGTTATCTACACGACGGGGAGTCAGGCAACT
ATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAA
GCATTGGTAATGAGGGCCCAAATGTAATCACCTGGCTCACCTTCGGGTGG
GCCTTTCTGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAG
CATCACAAAAATCGATGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACT
ATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTG
TTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGA
AGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTA
GGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCG
ACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGA
CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGC
GAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACG
GCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTT
ACCTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCT
GGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAA
AGGATCTCAAGAAGATCCTTTGATTTTCTACCGAAGAAAGGCCCACCCGT
GAAGGTGAGCCAGTGAGTTGATTGCAGTCCAGTTACGCTGGAGTCTGAGG
CTCGTCCTGAATGATATCAAGCTTGAATTCGTT
```

B. SEQ ID NO: 86

```
GACGCATATCTGGATCCTGCAGCCGATACGGTCGTCGTCCGTTTAAACGTTGTGTCTCAAAATCTCTGATG
TCACGTTGCACAAGATAAAAATATATCATCATGAACAATAAAACCGTCTGCTTACATAAACAGTAATACAA
GGGGTGTTATGAGCCATATTCAACGGGAAACGTCTTGCTCGAGGCCGCGATTAAATTCCAACATGGATGCT
GATTTATATGGGTATAAATGGGCTCGCGATAATGTCGGGCAATCAGGTGCGACAATCTATCGATTGTATGG
GAAGCCCGATGCGCCAGAGTTGTTTCTGAAACATGGCAAAGGTAGCGTTGCCAATGATGTTACAGATGAGA
TGGTCAGGCTAAACTGGCTGACGGAATTTATGCCTCTTCCGACCATCAAGCATTTTATCCGTACTCCTGAT
GATGCATGGTTACTCACCACTGCGATCCCAGGGAAAACAGCATTCCAGGTATTAGAAGAATATCCTGATTC
AGGTGAAAATATTGTTGATGCGCTGGCAGTGTTCCTGCGCCGGTTGCATTCGATTCCTGTTTGTAATTGTC
CTTTTAACGGCGATCGCGTATTTCGTCTCGCTCAGGCGCAATCACGAATGAATAACGGTTTGGTTGGTGCG
AGTGATTTTGATGACGAGCGTAATGGCTGGCCTGTTGAACAAGTCTGGAAAGAAATGCATAAGCTTTTGCC
ATTCTCACCGGATTCAGTCGTCACTCATGGTGATTTCTCACTTGATAACCTTATTTTTGACGAGGGGAAAT
TAATAGGTTGTATTGATGTTGGACGAGTCGGAATCGCAGACCGATACCAGGATCTTGCCATCCTATGGAAC
TGCCTCGGTGAGTTTTCTCCTTCATTACAGAAACGGCTTTTTCAAAAATATGGTATTGATAATCCTGATAT
GAATAAATTGCAGTTTCACTTGATGCTCGATGAGTTTTTCTAATCAAATAAAACGAAAGGCTCAGTCGAAA
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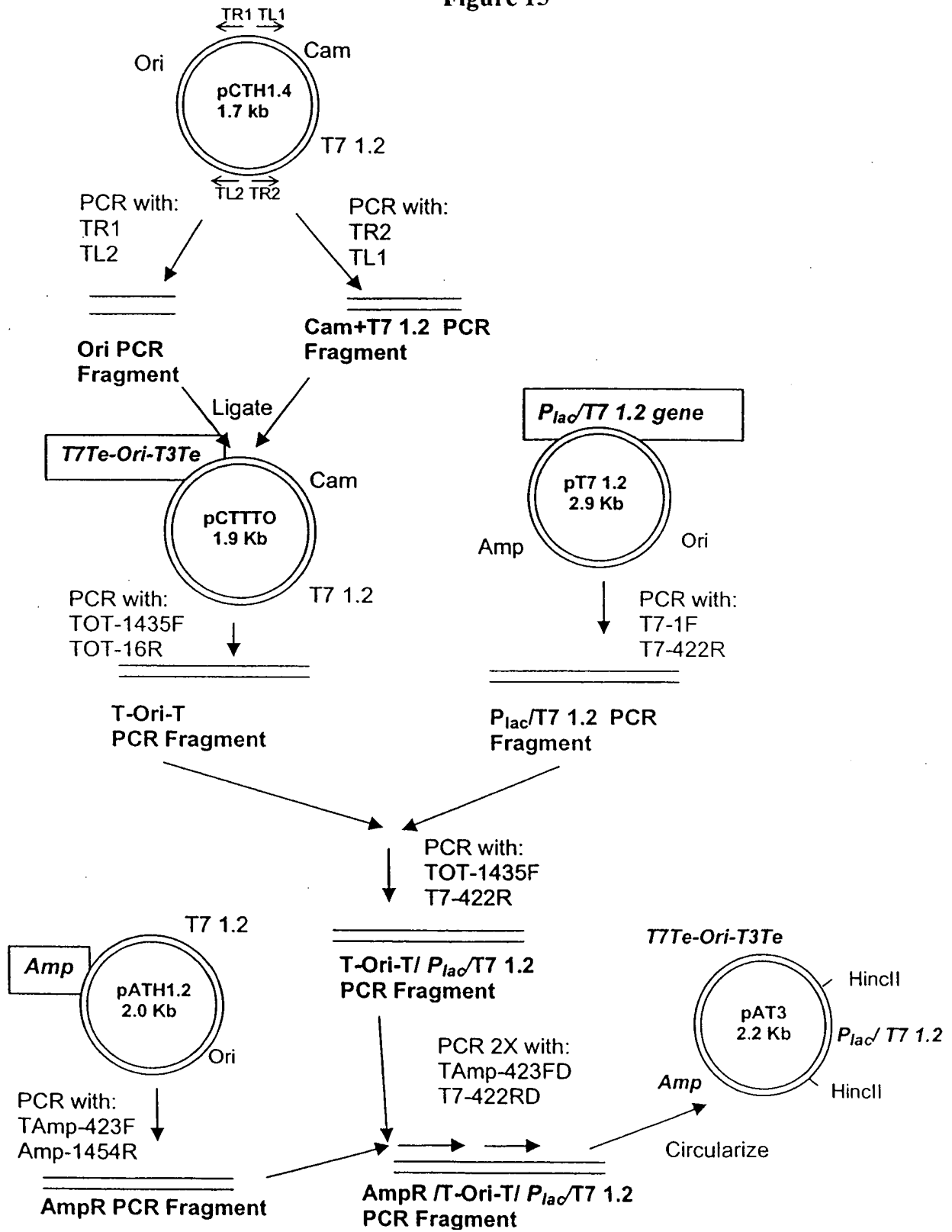**Figure 15**

FIGURE 16